1.3 Function Notation

We now use f(x) instead of y ☆ Read "f at x" or "f of x"

$f(x) = y$

i.e. $y = 2x+1$ is $f(x)= 2x+1$

this notation is useful for such things as describing height as a function of time h(t)

$f(x) = 9$

$f(x) = x^2+2x+1$

$f(2) = x^2+2x+1$

$= (2)^2+2(2)+1$

$= 4+4+1$

$= 9$

Ex 1: Connecting the height of a ball above the ground with time:

A ball was dropped from a height of 200m and it's height above the ground is represented by the following function:

$h(t) = -5t^2 + 3t + 200$

y-intercept

t = seconds

How would you find the height of the ball at any time?

⇨ Sub in values for t and solve for h

Note "t" is time so do not sub in neg. values

Domain should make sense to the question

t	h
0	200
1	198
2	186
3	164

$= -5(3)^2+3(3)+200$

$= -5(9)+9+200$

$= -45+9+200$

$=$

$= -5(2)^2+3(2)+200$

$= -5(4)+6+200$

$= -20+6+200$

Ex 2: If $f(x) = 2(x-1)^2+3$, find:

a) $f(0) = 2(0-1)^2+3$

$= 2(-1)^2+3$

$= 2+3$

$= 5$

$f(x) = 5$

b) $f(4) = 2(4-1)^2+3$

$= 2(3)^2+3$

$= 2(9)+3$

$= 18+3$

$= 21$

$f(x) = 21$

c) $f(\frac{1}{2}) = 2(\frac{1}{2}-1)^2+3$

$= 2(-\frac{1}{2})^2+3$

$= 2(\frac{1}{4})+3$

$= \frac{1}{2}+3$

$= 3\frac{1}{2}$

$= \frac{7}{2}$

$f(x) = \frac{7}{2}$

d) $f(4) - f(1)$

$= 21-(2(1-1)^2+3)$

$= 21-(3)$

$= 21-3$

$= 18$

$f(x) = 18$

Ex 2 continued: If $f(x) = 2(x-1)^2+3$, find:

e) $f(3m)$

$= 2(3m-1)^2+3$

$= 2(3m-1)(3m-1)+3$

$= 2(9m^2-3m-3m+1)+3$

$= 2(9m^2-6m+1)+3$

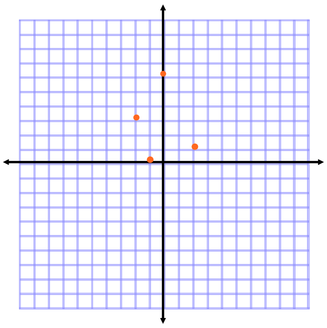
$= 18m^2-12m+2+3$

$= 18m^2-12m+5$

f) $f(4x)$

$= 32x^2-16x+5$

Ex 3 Given the graph of f evaluate:



FROM THE POINT
(- 2, 3)

f(-2) = 3

f(-1) = 0

f(0) = 6

f(7) = NA.

Hmwk :

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